

Claims

1. A method for detecting a gene mutation comprising:
 - a step of forming a double-stranded nucleic acid by a single-stranded target nucleic acid having a target base composed of one or more continuous bases and two kinds of single-stranded detecting nucleic acids complementary to two kinds of partial sequences that sandwich the target base between them;
 - a step of inserting a receptor having hydrogen bonding characteristics and fluorescence emitting characteristics into the double-stranded nucleic acid to form a hydrogen bond with the target base: and
 - a step of measuring the fluorescent strength of the double-stranded nucleic acid into which the receptor is inserted.
2. The method for detecting a gene mutation according to claim 1, wherein the receptor has a heterocyclic aromatic group and is stabilized by the formation of a hydrogen bond to the target base and a stacking interaction with the base adjacent to the receptor to form a pair with the target base.
3. The method for detecting a gene mutation according to claim 2, wherein the receptor is at least one of a group including, for instance, a naphthalidine derivative, a quinoline derivative, a pteridine derivative, a coumarin derivative, an indazol derivative, an alloxazine derivative and amyloide.
4. A kit for detecting a gene mutation comprising:
 - two kinds of single-stranded detecting nucleic acids complementary to

two kinds of partial sequences that sandwich a target base between them in a single-stranded target nucleic acid having the target base composed of one or more continuous bases; and

a receptor having hydrogen bonding characteristics and fluorescence emitting characteristics and inserted into a double-stranded nucleic acid formed by the target nucleic acid and the two kinds of detecting nucleic acids to form a hydrogen bond to the target base.

5. A method for detecting a gene mutation comprising:

a step of dropping on a substrate to which a receptor having hydrogen bonding characteristics is fixed a single-stranded target nucleic acid having a target base composed of one or more continuous bases and two kinds of single-stranded detecting nucleic acids complementary to two kinds of partial sequences that sandwich the target base between them to form a double-stranded nucleic acid by the target nucleic acid and the two kinds of detecting nucleic acids and form a hydrogen bond by the target base and the receptor; and

a step of identifying the target base on the basis of the bond of the target base and the receptor.

6. The method for detecting a gene mutation according to claim 5, wherein the receptor shows fluorescence emitting characteristics and the target base is identified on the basis of the change of fluorescent strength of the double-stranded nucleic acid into which the receptor is inserted.

7. The method for detecting a gene mutation according to claim 5, wherein the target base is identified on the basis of the change of a signal strength of a surface plasmon resonance due to the bond of the target base and the receptor or the change of resonance frequency of a crystal oscillator.

8. A kit for detecting a gene mutation comprising:

two kinds of single-stranded detecting nucleic acids complementary to two kinds of partial sequences that sandwich a target base between them in a single-stranded target nucleic acid having the target base composed of one or more continuous bases;

a receptor having hydrogen bonding characteristics and inserted into a double-stranded nucleic acid formed by the target nucleic acid and the two kinds of detecting nucleic acids to form a hydrogen bond with the target base; and

a substrate to which the receptor is fixed.

9. A method for detecting a gene mutation comprising:

a step of dropping on a substrate to which one detecting nucleic acid of two kinds of single-stranded detecting nucleic acids complementary to two kinds of partial sequences that sandwich a target base between them in a single-stranded target nucleic acid having the target base composed of one or more continuous bases is fixed, the target nucleic acid, the other detecting nucleic acid and a receptor showing hydrogen bonding characteristics to form a double-stranded nucleic acid by the target nucleic acid and the two kinds of detecting nucleic acids

and form a hydrogen bond by the target base and the receptor; and
a step of identifying the target base on the basis of the bond of the target
base and the receptor.

10. The method for detecting a gene mutation according to claim 9, wherein
the receptor shows fluorescence emitting characteristics and the target base is
identified on the basis of the change of fluorescent strength of the double-stranded
nucleic acid into which the receptor is inserted.

11. A kit for detecting a gene mutation comprising:

two kinds of single-stranded detecting nucleic acids complementary to
two kinds of partial sequences that sandwich a target base between them in a
single-stranded target nucleic acid having the target base composed of one or more
continuous bases;

a receptor having hydrogen bonding characteristics and inserted into a
double-stranded nucleic acid formed by the target nucleic acid and the two kinds of
detecting nucleic acids to form a hydrogen bond with the target base; and

a substrate to which one of the two kinds of detecting nucleic acids is
fixed.